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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,163	10/28/2003	Leo Mathew	SC12746TP	7172
26837	7590	09/03/2004	EXAMINER	
LALLY & LALLY LLP PO BOX 684749 AUSTIN, TX 78768-4749			DANG, TRUNG Q	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 09/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,163	MATHEW ET AL.	
	Examiner	Art Unit	
	Trung Dang	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21 is/are allowed.
- 6) ☒ Claim(s) 1-4, 10-13, 17, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 5-9, 14-16 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 10-13, 17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Hu et al. (U.S. Pat. 6,413,802).

The reference anticipates the claims in that it discloses a method of fabricating a FinFET device comprising the steps of: forming a silicon fin (14) overlying a substrate, the fin having first and second primary faces (longitudinal faces of the Si Fin depicted in Fig. 2C) substantially perpendicular to a surface of the substrate; forming a gate dielectric (col. 3, lines 57-60) on the first and second primary faces of the silicon fin; forming a gate electrode (20) overlying the gate dielectric (Fig. 2D; col. 3, lines 61-64 and claim 1); and forming dielectric spacers (24) confined to regions adjacent to sidewalls of the gate electrode, wherein portions of the primary fin faces outside regions of the dielectric spacers are exposed (Fig. 2E and claim 1).

For claims 2, 3, 11-13, see col. 4, lines 31-50 and Fig. 2F for the claimed limitation concerning the epitaxial growth and the silicidation of the source and drain regions (exposed portions of the primary fin faces).

For claim 4, as shown in Fig. 2D, the formation of the gate electrode defines confinement regions (i.e., channel regions) adjacent sidewall of a portion of the gate electrode.

For claim 10, see col. 3, lines 49-56 for the etching of the hard mask (corresponds to the claimed capping dielectric) and the stripping (or etching) of an oxide grown on the fin, thereby reducing the fin width. Noted that the etching steps as claimed does not limit to a single etch process to remove both the capping material and the underlying silicon, hence the abovementioned etching and stripping processes read on the claimed limitation.

For the device claims 17 and 20 the process recited above results in a structure as claimed, including the limitation of claim 20 (see the above rejection of claims 2, 3, 11-13 in conjunction with Fig. 2F in which the spacers prevent electrical conduction between conductive material (26) and the gate electrode.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 recites the limitations "the first material" and "the capping layer" in line 9. There is insufficient antecedent basis for these limitations in the claim. It is suggested that claim 19 should depend on claim 18, not claim 17.

Allowable Subject Matter

5. Claims 5-9, 14-16 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

Each of claims 5 and 14 further limits the step of forming the gate electrode, which comprises a sequence of process steps that produces the width of the first material that is less than the width of the overlying capping layer.

Claim 18 further limits the structure of the gate electrode, which comprises a first material and a capping layer overlying the first material, wherein a width of the first material is less than a width of the capping layer, wherein the dielectric spacers occupy regions under the portion of the capping layer overhanging the first material.

7. Claim 21 is allowed over prior art of record.

8. The following is an examiner's statement of reasons for allowance:

Claim 21 is allowed because prior art of record fails to teach or suggest the process as claimed, including the steps of patterning the capping layer, wherein the capping layer forms a cap overlying the gate electrode and having a lateral dimension greater than a lateral dimension of the underlying gate electrode, further forming a confined region adjacent sidewalls of the gate electrodes; and forming dielectric spacers confined within the confinement regions adjacent sidewalls of the gate electrode, wherein portions of the primary fin faces outside regions of the dielectric spacers are exposed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Dang whose telephone number is 571-272-1857. The examiner can normally be reached on Mon-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Trung Dang
Primary Examiner
Art Unit 2823

8/27/04

A handwritten signature in black ink, appearing to read 'Trung Dang', is written in a cursive style.